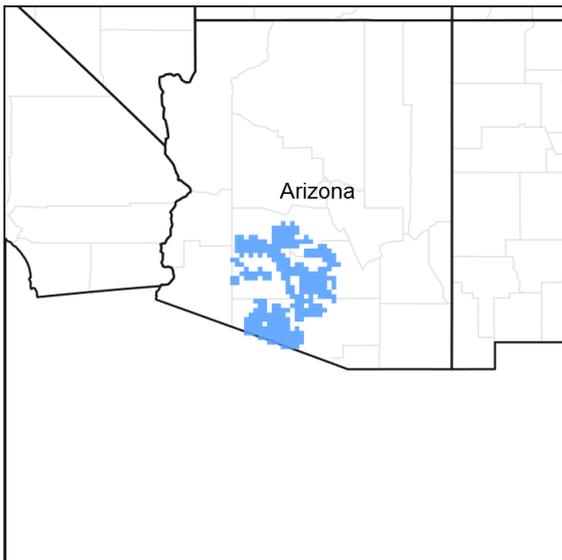


## **Ecological site R040XB211AZ Loamy Swale 7"-10" p.z.**

Accessed: 04/24/2024

### General information

**Provisional.** A provisional ecological site description has undergone quality control and quality assurance review. It contains a working state and transition model and enough information to identify the ecological site.



**Figure 1. Mapped extent**

Areas shown in blue indicate the maximum mapped extent of this ecological site. Other ecological sites likely occur within the highlighted areas. It is also possible for this ecological site to occur outside of highlighted areas if detailed soil survey has not been completed or recently updated.

### MLRA notes

Major Land Resource Area (MLRA): 040X–Sonoran Basin and Range

AZ 40.2 – Middle Sonoran Desert

Elevations range from 1200 to 2000 feet and precipitation averages 7 to 10 inches per year. Vegetation includes saguaro, palo verde, creosotebush, triangle bursage, brittlebush, prickly pear, cholla, desert saltbush, wolfberry bush muhly, threeawns, and big galleta. The soil temperature regime is hyperthermic and the soil moisture regime is typic aridic. This unit occurs within the Basin and Range Physiographic Province and is characterized by numerous mountain ranges that rise abruptly from broad, plain-like valleys and basins. Igneous and metamorphic rock classes dominate the mountain ranges and sediments filling the basins represent combinations of fluvial, lacustrine, colluvial and alluvial deposits.

**Table 1. Dominant plant species**

|            |   |
|------------|---|
| Tree       | Not specified   |
| Shrub      | Not specified   |
| Herbaceous | (1) <i>Pleuraphis rigida</i><br>(2) <i>Muhlenbergia porteri</i> |

## Physiographic features

This site occurs on floodplains and alluvial fans. Slopes are from 0 to 2%. This site benefits on a regular basis from extra moisture received as runoff from adjacent uplands and/or watershed areas. Watershed size is less than 10,000 acres.

**Table 2. Representative physiographic features**

|           |                                     |
|-----------|-------------------------------------|
| Landforms | (1) Flood plain<br>(2) Alluvial fan |
| Elevation | 900–2,050 ft                        |
| Slope     | 0–2%                                |

## Climatic features

Precipitation in the sub-resource area ranges from 7 to 10 inches. Elevations range from 900 to 2050 feet. Winter-summer rainfall ratios range from 40% to 60% in the southern part along the international boundary, to 60% to 40% in the central and northern parts of the sub-resource area. As one moves from east to west in this resource area rains become more unpredictable and variable with Coefficients of Variation of annual rainfall equal to 38% at Florence and 46% at Aguila. Summer rains fall July- September, originate in the Gulf of Mexico, and are convective, usually brief, intense thunderstorms. Summer precipitation is extremely erratic and undependable in this area. Cool season moisture tends to be frontal, originates in the Pacific and Gulf of California, and falls in widespread storms with long duration and low intensity. This is the dependable moisture supply for vegetation in the area. Snow is very rare and usually melts on contact. May-June is the driest time of the year. Humidity is very low.

Winter temperatures are very mild with very few days recording freezing for short periods of time. Summertime temperatures are hot to very hot with many days in June-July exceeding 105 degrees F. Frost-free days range from 280 at stations in major river valleys with cold air drainage to 320 to 350 days at upland stations.

Both the spring and the summer growing seasons are equally important for perennial grass, forb and shrub growth. Cool and warm season annual forbs and grasses can be common in their respective seasons with above average rainfall. Perennial forage species can remain green throughout the year with available moisture.

**Table 3. Representative climatic features**

|                               |          |
|-------------------------------|----------|
| Frost-free period (average)   | 350 days |
| Freeze-free period (average)  | 0 days   |
| Precipitation total (average) | 10 in    |

## Influencing water features

### Soil features

These are deep, young soils on loamy alluvium from mixed origins. Surface texture may include silt loam, and silty clay loam. Subsurface texture group may include fine silty and coarse silty. They may or may not be calcareous, are not saline and have low shrink-swell potentials. Plant-soil moisture relationships are excellent. This site is mapped in 6 Soil Survey areas in the D40-2 CRA in South Western Arizona.

Soils mapped on this site include: SSA-651 Central Maricopa County MU's Aqualt-Aa, Gadsen clay loam-Gb, Gilman-Ge & GL, & Vecont-Ve; SSA-653 Gila Bend-Ajo area MU's Cuerda-14 & Mohall(flooded)-48; SSA-659 Western Pinal County MU's Cuerda-12, Gilman-21 & 22, Glenbar-24 & Trix-45; SSA-661 Eastern Pinal-Southern Gila Counties MU's Gilman-270, 360 & 365, Glenbar-350 & Mohall(flooded)-575 & 830; SSA-669 Eastern Pima County MU Trix-46; SSA-703 Tohono O'odham area MU's Gilman-25, Glenbar-27, Trix-44 & Valencia-59.

**Table 4. Representative soil features**

|  |   |
|--|---|
| Surface texture  | (1) Fine sandy loam<br>(2) Very fine sandy loam<br>(3) Loam |
| Family particle size                                     | (1) Loamy   |
| Drainage class   | Well drained  |
| Permeability class                                       | Moderately slow to moderately rapid                         |
| Soil depth   | 60 in   |
| Surface fragment cover <=3"                              | 0%  |
| Surface fragment cover >3"                               | 0%  |
| Available water capacity<br>(0-40in)                     | 8.4–11.4 in   |
| Calcium carbonate equivalent<br>(0-40in)                 | 1–10%   |
| Electrical conductivity<br>(0-40in)                      | 0–2 mmhos/cm  |
| Sodium adsorption ratio<br>(0-40in)                      | 0   |
| Soil reaction (1:1 water)<br>(0-40in)                    | 7.9–8.4   |
| Subsurface fragment volume <=3"<br>(Depth not specified) | 0%  |
| Subsurface fragment volume >3"<br>(Depth not specified)  | 0%  |

## Ecological dynamics

The plant communities found on an ecological site are naturally variable. Composition and production will vary with yearly conditions, location, aspect, and the natural variability of the soils. The Historical Climax Plant Community represents the natural potential plant communities found on relict or relatively undisturbed sites. Other plant communities described here represent plant communities that are known to occur when the site is disturbed by factors such as fire, grazing, or drought.

Production data provided in this site description is standardized to air dry weight at the end of the summer growing season. The plant communities described in this site description are based on near normal rainfall years.

NRCS uses a Similarity Index to compare existing plant communities to the plant communities described here. Similarity Index is determined by comparing the production and composition of a plant community to the production and composition of a plant community described in this site description. To determine Similarity Index, compare the production (air dry weight) of each species to that shown in the plant community description. For each species, count no more than the maximum amount shown for the species, and for each group, count no more than the maximum amount shown for the group. Divide the resulting total by the total normal year production shown in the plant community description. If the rainfall has been significantly above or below normal, use the total production shown for above or below normal years. If field data is not collected at the end of the summer growing season, then the field data must be corrected to the end of the year production before comparing it to the site description. The growth curve can be used as a guide for estimating production at the end of the summer growing season.

## State and transition model



**State 1  
Historical Climax Plant Community**

**Community 1.1  
Historical Climax Plant Community**

The potential plant community on this site is a diverse mixture of perennial and annual grasses and forbs, trees, shrubs and cacti. The aspect is shrubland. With continuous, heavy grazing, perennial grasses are removed from the plant community. When the grass cover is depleted, this site is extremely susceptible to gully erosion. Mesquite, whitethorn acacia, jimmyweed, and alkalai goldenweed can quickly increase to dominate the plant community with heavy use and erosion. Base level changes in larger watersheds can lead to the eventual gullying of this site. Gully formation acts to rapidly drain floodwaters from the site reducing the potential productivity. The natural tree canopy cover on the site is less than 20%. The trees reach only moderate size on this site. Bermuda and Johnson grass are common introduced, perennial grasses on the site. Cocklebur and ragweed can become problem species with overgrazing. Red brome, foxtail barley, filaree, and London rocket are common, cool season introduced annual species found on the site. Cryptogam cover can be high on this site. Mosses (Musci), algae (Chara, Oscillatoria, and Spirogya spp) and fungi (Phycomycetes, Ascomycetes, and Basidiomycetes) are all common. Plant populations of major species on this site are from 50 to 100 trees per acre for mesquite and from 100 to 200 plants per acre for the creosote-whitethorn group.

Table 5. Annual production by plant type

| Plant Type      | Low (Lb/Acre) | Representative Value (Lb/Acre) | High (Lb/Acre) |
|-----------------|---------------|--------------------------------|----------------|
| Shrub/Vine      | 480           | –                              | 780            |
| Tree            | 480           | –                              | 780            |
| Grass/Grasslike | 300           | –                              | 420            |
| Forb            | 120           | –                              | 240            |
| <b>Total</b>    | <b>1380</b>   | <b>–</b>                       | <b>2220</b>    |

## Additional community tables

Table 6. Community 1.1 plant community composition

| Group                  | Common Name          | Symbol | Scientific Name                                   | Annual Production (Lb/Acre) | Foliar Cover (%) |
|------------------------|----------------------|--------|---|-----------------------------|------------------|
| <b>Grass/Grasslike</b> |                      |        |   |                             |                  |
| 1                      |                      |        |   | 54–72                       |                  |
|                        | bush muhly           | MUPO2  | <i>Muhlenbergia porteri</i>                       | 54–72                       | –                |
| 2                      |                      |        |   | 18–36                       |                  |
|                        | purple threeawn      | ARPU9  | <i>Aristida purpurea</i>                          | 18–36                       | –                |
|                        | blue threeawn        | ARPUN  | <i>Aristida purpurea</i> var. <i>nealleyi</i>     | 18–36                       | –                |
|                        | Parish's threeawn    | ARPUP5 | <i>Aristida purpurea</i> var. <i>parishii</i>     | 18–36                       | –                |
|                        | Wright's threeawn    | ARPUW  | <i>Aristida purpurea</i> var. <i>wrightii</i>     | 18–36                       | –                |
|                        | spidergrass          | ARTE3  | <i>Aristida ternipes</i>                          | 18–36                       | –                |
|                        | spidergrass          | ARTEG  | <i>Aristida ternipes</i> var. <i>gentilis</i>     | 18–36                       | –                |
|                        | low woollygrass      | DAPU7  | <i>Dasyochloa pulchella</i>                       | 18–36                       | –                |
|                        | Arizona cottontop    | DICA8  | <i>Digitaria californica</i>                      | 18–36                       | –                |
|                        | tanglehead           | HECO10 | <i>Heteropogon contortus</i>                      | 18–36                       | –                |
|                        | vine mesquite        | PAOB   | <i>Panicum obtusum</i>                            | 18–36                       | –                |
|                        | whiplash pappusgrass | PAVA2  | <i>Pappophorum vaginatum</i>                      | 18–36                       | –                |
|                        | tobosagrass          | PLMU3  | <i>Pleuraphis mutica</i>                          | 18–36                       | –                |
|                        | big galleta          | PLRI3  | <i>Pleuraphis rigida</i>                          | 18–36                       | –                |
|                        | plains bristlegrass  | SEVU2  | <i>Setaria vulpiseta</i>                          | 18–36                       | –                |
|                        | spike dropseed       | SPCO4  | <i>Sporobolus contractus</i>                      | 18–36                       | –                |
|                        | sand dropseed        | SPCR   | <i>Sporobolus cryptandrus</i>                     | 18–36                       | –                |
|                        | slim tridens         | TRMU   | <i>Tridens muticus</i>                            | 18–36                       | –                |
|                        | Pacific fescue       | VUMIP  | <i>Vulpia microstachys</i> var. <i>pauciflora</i> | 18–36                       | –                |
| 3                      |                      |        |   | 18–54                       |                  |
|                        | sixweeks threeawn    | ARAD   | <i>Aristida adscensionis</i>                      | 18–54                       | –                |
|                        | prairie threeawn     | AROL   | <i>Aristida oligantha</i>                         | 18–54                       | –                |
|                        | needle grama         | BOAR   | <i>Bouteloua aristidoides</i>                     | 18–54                       | –                |
|                        | sixweeks grama       | BOBA2  | <i>Bouteloua barbata</i>                          | 18–54                       | –                |
|                        | Rothrock's grama     | BORO2  | <i>Bouteloua rothrockii</i>                       | 18–54                       | –                |
|                        | Arizona brome        | BRAR4  | <i>Bromus arizonicus</i>                          | 18–54                       | –                |
|                        | feather fingergrass  | CHVI4  | <i>Chloris virgata</i>                            | 18–54                       | –                |
|                        | bearded cupgrass     | ERAR5  | <i>Eriochloa aristata</i>                         | 18–54                       | –                |
|                        | canyon cupgrass      | ERLE7  | <i>Eriochloa lemmonii</i>                         | 18–54                       | –                |

|             |                            |        |   |        |   |
|-------------|----------------------------|--------|---|--------|---|
|             | desert lovegrass           | ERPEM  | <i>Eragrostis pectinacea</i> var. <i>miserrima</i>  | 18–54  | – |
|             | tufted lovegrass           | ERPEP2 | <i>Eragrostis pectinacea</i> var. <i>pectinacea</i> | 18–54  | – |
|             | Mexican sprangletop        | LEFUU  | <i>Leptochloa fusca</i> ssp. <i>uninervia</i>       | 18–54  | – |
|             | mucronate sprangletop      | LEPA6  | <i>Leptochloa panicea</i>                           | 18–54  | – |
|             | sticky sprangletop         | LEVI5  | <i>Leptochloa viscida</i>                           | 18–54  | – |
|             | delicate muhly             | MUFR   | <i>Muhlenbergia fragilis</i>                        | 18–54  | – |
|             | littleseed muhly           | MUMI   | <i>Muhlenbergia microsperma</i>                     | 18–54  | – |
|             | witchgrass                 | PACA6  | <i>Panicum capillare</i>                            | 18–54  | – |
|             | Bigelow's bluegrass        | POBI   | <i>Poa bigelovii</i>                                | 18–54  | – |
|             | Arizona signalgrass        | URAR   | <i>Urochloa arizonica</i>                           | 18–54  | – |
|             | sixweeks fescue            | VUOC   | <i>Vulpia octoflora</i>                             | 18–54  | – |
| 4           |                            |        |   | 4–18   |   |
|             | bigseed alfalfa dodder     | CUIN   | <i>Cuscuta indecora</i>                             | 4–18   | – |
|             | mesquite mistletoe         | PHCA8  | <i>Phoradendron californicum</i>                    | 4–18   | – |
| 5           |                            |        |   | 4–18   |   |
|             | Alga                       | 2ALGA  | <i>Alga</i>   | 4–18   | – |
|             | Fungus                     | 2FUNGI | <i>Fungus</i>                                       | 4–18   | – |
|             | Moss                       | 2MOSS  | <i>Moss</i>   | 4–18   | – |
| <b>Forb</b> |                            |        |   |        |   |
| 6           |                            |        |   | 60–120 |   |
|             | dwarf desertpeony          | ACNA2  | <i>Acourtia nana</i>                                | 0–1    | – |
|             | brownfoot                  | ACWR5  | <i>Acourtia wrightii</i>                            | 0–1    | – |
|             | poreleaf dogweed           | ADPO2  | <i>Adenophyllum porophyllum</i>                     | 0–1    | – |
|             | weakleaf bur ragweed       | AMCO3  | <i>Ambrosia confertiflora</i>                       | 0–1    | – |
|             | fringed amaranth           | AMFI   | <i>Amaranthus fimbriatus</i>                        | 0–1    | – |
|             | common fiddleneck          | AMMEI2 | <i>Amsinckia menziesii</i> var. <i>intermedia</i>   | 0–1    | – |
|             | carelessweed               | AMPA   | <i>Amaranthus palmeri</i>                           | 0–1    | – |
|             | bristly fiddleneck         | AMTE3  | <i>Amsinckia tessellata</i>                         | 0–1    | – |
|             | field anoda                | ANPE4  | <i>Anoda pentaschista</i>                           | 0–1    | – |
|             | New Mexico silverbush      | ARNE2  | <i>Argythamnia neomexicana</i>                      | 0–1    | – |
|             | smallflowered milkvetch    | ASNU4  | <i>Astragalus nuttallianus</i>                      | 0–1    | – |
|             | milkvetch                  | ASTRA  | <i>Astragalus</i>                                   | 0–1    | – |
|             | wheelscale saltbush        | ATEL   | <i>Atriplex elegans</i>                             | 0–1    | – |
|             | Wright's saltbush          | ATWR   | <i>Atriplex wrightii</i>                            | 0–1    | – |
|             | desert marigold            | BAMU   | <i>Baileya multiradiata</i>                         | 0–1    | – |
|             | scarlet spiderling         | BOCO   | <i>Boerhavia coccinea</i>                           | 0–1    | – |
|             | hoary bowlesia             | BOIN3  | <i>Bowlesia incana</i>                              | 0–1    | – |
|             | exserted Indian paintbrush | CAEXE  | <i>Castilleja exserta</i> ssp. <i>exserta</i>       | 0–1    | – |
|             | yellow tackstem            | CAPA7  | <i>Calycoseris parryi</i>                           | 0–1    | – |
|             | white tackstem             | CAWR   | <i>Calycoseris wrightii</i>                         | 0–1    | – |
|             | lambsquarters              | CHAL7  | <i>Chenopodium album</i>                            | 0–1    | – |
|             | brittle spineflower        | CHBR   | <i>Chorizanthe brevicornu</i>                       | 0–1    | – |
|             | aridland goosefoot         | CHDE   | <i>Chenopodium desiccatum</i>                       | 0–1    | – |

|                             |        |   |     |   |
|-----------------------------|--------|---|-----|---|
| hyssopleaf sandmat          | CHHY3  | <i>Chamaesyce hyssopifolia</i>  | 0-1 | - |
| New Mexico thistle          | CINE   | <i>Cirsium neomexicanum</i>   | 0-1 | - |
| sand pygmyweed              | CRCO34 | <i>Crassula connata</i>   | 0-1 | - |
| cryptantha                  | CRYPT  | <i>Cryptantha</i>   | 0-1 | - |
| fingerleaf gourd            | CUDI   | <i>Cucurbita digitata</i>   | 0-1 | - |
| coyote gourd                | CUPA   | <i>Cucurbita palmata</i>  | 0-1 | - |
| pricklyburr                 | DAIN2  | <i>Datura inoxia</i>  | 0-1 | - |
| hairy prairie clover        | DAMO   | <i>Dalea mollis</i>   | 0-1 | - |
| American wild carrot        | DAPU3  | <i>Daucus pusillus</i>  | 0-1 | - |
| western tansymustard        | DEPI   | <i>Descurainia pinnata</i>  | 0-1 | - |
| bluedicks                   | DICAC5 | <i>Dichelostemma capitatum ssp. capitatum</i>                                 | 0-1 | - |
| touristplant                | DIWI2  | <i>Dimorphocarpa wislizeni</i>  | 0-1 | - |
| miniature woollystar        | ERDI2  | <i>Eriastrum diffusum</i>   | 0-1 | - |
| spreading fleabane          | ERDI4  | <i>Erigeron divergens</i>   | 0-1 | - |
| woolly sunflower            | ERIOP2 | <i>Eriophyllum</i>  | 0-1 | - |
| Texas stork's bill          | ERTE13 | <i>Erodium texanum</i>  | 0-1 | - |
| California poppy            | ESCAM  | <i>Eschscholzia californica ssp. mexicana</i>                                 | 0-1 | - |
| spurge                      | EUPHO  | <i>Euphorbia</i>  | 0-1 | - |
| hairy desertsunflower       | GECA2  | <i>Geraea canescens</i>   | 0-1 | - |
| gilia                       | GILIA  | <i>Gilia</i>  | 0-1 | - |
| Indian rushpea              | HOGL2  | <i>Hoffmannseggia glauca</i>  | 0-1 | - |
| morningglory                | IPER   | <i>Ipomoea eriocarpa</i>  | 0-1 | - |
| slender janusia             | JAGR   | <i>Janusia gracilis</i>   | 0-1 | - |
| Arizona poppy               | KAGR   | <i>Kallstroemia grandiflora</i>   | 0-1 | - |
| prickly lettuce             | LASE   | <i>Lactuca serriola</i>   | 0-1 | - |
| Gordon's bladderpod         | LEGO   | <i>Lesquerella gordonii</i>   | 0-1 | - |
| shaggyfruit pepperweed      | LELA   | <i>Lepidium lasiocarpum</i>   | 0-1 | - |
| coastal bird's-foot trefoil | LOSA   | <i>Lotus salsuginosus</i>   | 0-1 | - |
| Arizona lupine              | LUAR4  | <i>Lupinus arizonicus</i>   | 0-1 | - |
| Coulter's lupine            | LUSP2  | <i>Lupinus sparsiflorus</i>   | 0-1 | - |
| disc mayweed                | MADI6  | <i>Matricaria discoidea</i>   | 0-1 | - |
| lacy tansyaster             | MAPIP4 | <i>Machaeranthera pinnatifida ssp. pinnatifida</i><br><i>var. pinnatifida</i> | 0-1 | - |
| Nuttall's povertyweed       | MONU   | <i>Monolepis nuttalliana</i>  | 0-1 | - |
| bristly nama                | NAHI   | <i>Nama hispidum</i>  | 0-1 | - |
| desert tobacco              | NIOB   | <i>Nicotiana obtusifolia</i>  | 0-1 | - |
| desert evening primrose     | OEPR   | <i>Oenothera primiveris</i>   | 0-1 | - |
| Florida pellitory           | PAFL3  | <i>Parietaria floridana</i>   | 0-1 | - |
| combseed                    | PECTO  | <i>Pectocarya</i>   | 0-1 | - |
| manybristle chinchweed      | PEPA2  | <i>Pectis papposa</i>   | 0-1 | - |
| phacelia                    | PHACE  | <i>Phacelia</i>   | 0-1 | - |
| tepany bean                 | PHACL  | <i>Phaseolus acutifolius var. latifolius</i>                                  | 0-1 | - |
| tepany bean                 | PHACT  | <i>Phaseolus acutifolius var. tenuifolius</i>                                 | 0-1 | - |
| Arizona popcornflower       | PLAR   | <i>Plagiobothrys arizonicus</i>   | 0-1 | - |

|                   |                           |        |   |         |   |
|-------------------|---------------------------|--------|---|---------|---|
|                   | desert Indianwheat        | PLOV   | <i>Plantago ovata</i>                     | 0–1     | – |
|                   | slender poreleaf          | POGR5  | <i>Porophyllum gracile</i>                | 0–1     | – |
|                   | purslane                  | PORTU  | <i>Portulaca</i>                          | 0–1     | – |
|                   | doubleclaw                | PRPA2  | <i>Proboscidea parviflora</i>             | 0–1     | – |
|                   | New Mexico plumeseed      | RANE   | <i>Rafinesquia neomexicana</i>            | 0–1     | – |
|                   | canaigre dock             | RUHY   | <i>Rumex hymenosepalus</i>                | 0–1     | – |
|                   | violet wild petunia       | RUNU   | <i>Ruellia nudiflora</i>                  | 0–1     | – |
|                   | sleepy silene             | SIAN2  | <i>Silene antirrhina</i>                  | 0–1     | – |
|                   | silverleaf nightshade     | SOEL   | <i>Solanum elaeagnifolium</i>             | 0–1     | – |
|                   | desert globemallow        | SPAM2  | <i>Sphaeralcea ambigua</i>                | 0–1     | – |
|                   | Coulter's globemallow     | SPCO2  | <i>Sphaeralcea coulteri</i>               | 0–1     | – |
|                   | spear globemallow         | SPHA   | <i>Sphaeralcea hastulata</i>              | 0–1     | – |
|                   | woollyhead neststraw      | STMI2  | <i>Stylocline micropoides</i>             | 0–1     | – |
|                   | brownplume wirelettuce    | STPA4  | <i>Stephanomeria pauciflora</i>           | 0–1     | – |
|                   | sand fringe pod           | THCU   | <i>Thysanocarpus curvipes</i>             | 0–1     | – |
|                   | woolly tidestromia        | TILA2  | <i>Tidestromia lanuginosa</i>             | 0–1     | – |
|                   | Tumamoc globeberry        | TUMA   | <i>Tumamoca macdougalii</i>               | 0–1     | – |
|                   | vervain                   | VERBE  | <i>Verbena</i>                            | 0–1     | – |
|                   | Louisiana vetch           | VILUL2 | <i>Vicia ludoviciana ssp. ludoviciana</i> | 0–1     | – |
|                   | rough cocklebur           | XAST   | <i>Xanthium strumarium</i>                | 0–1     | – |
| <b>Tree</b>       |                           |        |   |         |   |
| 7                 |                           |        |   | 240–300 |   |
|                   | velvet mesquite           | PRVE   | <i>Prosopis velutina</i>                  | 240–300 | – |
| <b>Shrub/Vine</b> |                           |        |   |         |   |
| 8                 |                           |        |   | 95–126  |   |
|                   | whitethorn acacia         | ACCO2  | <i>Acacia constricta</i>                  | 95–126  | – |
|                   | crucifixion thorn         | CAEM4  | <i>Castela emoryi</i>                     | 95–126  | – |
|                   | creosote bush             | LATR2  | <i>Larrea tridentata</i>                  | 95–126  | – |
|                   | water jacket              | LYAN   | <i>Lycium andersonii</i>                  | 95–126  | – |
|                   | Arizona desert-thorn      | LYEX   | <i>Lycium exsertum</i>                    | 95–126  | – |
|                   | lotebush                  | ZIOB   | <i>Ziziphus obtusifolia</i>               | 95–126  | – |
| 9                 |                           |        |   | 6–13    |   |
|                   | ambrosia leaf bur ragweed | AMAM2  | <i>Ambrosia ambrosioides</i>              | 6–13    | – |
|                   | triangle bur ragweed      | AMDE4  | <i>Ambrosia deltoidea</i>                 | 6–13    | – |
|                   | hollywood                 | GUSA   | <i>Guaiaacum sanctum</i>                  | 6–13    | – |
|                   | alkali goldenbush         | ISACA2 | <i>Isocoma acradenia var. acradenia</i>   | 6–13    | – |
|                   | southern goldenbush       | ISPL   | <i>Isocoma pluriflora</i>                 | 6–13    | – |
|                   | burweed                   | ISTE2  | <i>Isocoma tenuisecta</i>                 | 6–13    | – |
|                   | whitestem paperflower     | PSCO2  | <i>Psilostrophe cooperi</i>               | 6–13    | – |
| 10                |                           |        |   | 32–63   |   |
|                   | catclaw acacia            | ACGR   | <i>Acacia greggii</i>                     | 32–63   | – |
|                   | fourwing saltbush         | ATCA2  | <i>Atriplex canescens</i>                 | 32–63   | – |
|                   | cattle saltbush           | ATPO   | <i>Atriplex polycarpa</i>                 | 32–63   | – |

|    |                             |        |                                 |       |   |
|----|-----------------------------|--------|---------------------------------|-------|---|
|    | desertbroom                 | BASA2  | <i>Baccharis sarothroides</i>   | 32–63 | – |
|    | Palmer ceanothus            | CEPA   | <i>Ceanothus palmeri</i>        | 32–63 | – |
|    | Berlandier's wolfberry      | LYBE   | <i>Lycium berlandieri</i>       | 32–63 | – |
|    | desert wolfberry            | LYMA   | <i>Lycium macrodon</i>          | 32–63 | – |
|    | desert ironwood             | OLTE   | <i>Olneya tesota</i>            | 32–63 | – |
|    | blue paloverde              | PAFL6  | <i>Parkinsonia florida</i>      | 32–63 | – |
|    | yellow paloverde            | PAMI5  | <i>Parkinsonia microphylla</i>  | 32–63 | – |
|    | soaptree yucca              | YUEL   | <i>Yucca elata</i>              | 32–63 | – |
| 11 |                             |        |                                 | 6–32  |   |
|    | burrobush                   | AMDU2  | <i>Ambrosia dumosa</i>          | 6–32  | – |
|    | Coulter's brickellbush      | BRCO   | <i>Brickellia coulteri</i>      | 6–32  | – |
|    | fairyduster                 | CAER   | <i>Calliandra eriophylla</i>    | 6–32  | – |
|    | Nevada jointfir             | EPNE   | <i>Ephedra nevadensis</i>       | 6–32  | – |
|    | sangre de cristo            | JACA2  | <i>Jatropha cardiophylla</i>    | 6–32  | – |
|    | littleleaf ratany           | KRER   | <i>Krameria erecta</i>          | 6–32  | – |
|    | white ratany                | KRGR   | <i>Krameria grayi</i>           | 6–32  | – |
|    | Mexican bladdersage         | SAME   | <i>Salazaria mexicana</i>       | 6–32  | – |
|    | American threefold          | TRCA8  | <i>Trixis californica</i>       | 6–32  | – |
|    | Parish's goldeneye          | VIPA14 | <i>Viguiera parishii</i>        | 6–32  | – |
|    | desert zinnia               | ZIAC   | <i>Zinnia acerosa</i>           | 6–32  | – |
| 12 |                             |        |                                 | 6–32  |   |
|    | Engelmann's hedgehog cactus | ECEN   | <i>Echinocereus engelmannii</i> | 6–32  | – |
|    | candy barrelcactus          | FEWI   | <i>Ferocactus wislizeni</i>     | 6–32  | – |
|    | nightblooming cereus        | PEGR3  | <i>Peniocereus greggii</i>      | 6–32  | – |

## Animal community

The plant community on this site, in good condition, provides adequate nutrition for livestock year round. Because of water availability in the rainy seasons, long green periods, shade, and easy accessibility, this site is often overused. Large areas may justify fencing to be able to manage separately from adjacent upland areas. Grazing should be avoided in the summer flooding season to avoid trampling wet soils and because heat, humidity and insects can reduce livestock performance. Stock pond developments placed in areas of this site should be designed to avoid drying up downstream areas and altering base levels allowing gully formation to occur.

Free water is available in the rainy seasons in natural charcos and discontinuous gullies. Forage diversity, cover, and shade are good and combined with moderate tree canopies make this site home to a wide variety of desert mammals, birds, and reptiles. Water developments can create permanent supplies increasing the use of this site by the larger desert mammals and some bird species.

## Other information

T&E: *Antilocapra Americana sonoriensis*  
(Sonoran pronghorn)  
*Tumamoca Macdougalii*  
(Tumamoc globeberry)  
*Leptonycteris curasoae* yerbe buena  
(Lesser long-nosed bat)

## Type locality

|                                 |   |
|---------------------------------|---|
| Location 1: Pima County, AZ     |   |
| Township/Range/Section          | T19S R1E S17  |
| General legal description       | Sells FO - Papago Farms enclosure                       |
| Location 2: Maricopa County, AZ |   |
| Township/Range/Section          | T1S R7E S14   |
| General legal description       | Chandler FO - General Motors Proving Grounds            |
| Location 3: Pima County, AZ     |   |
| Township/Range/Section          | T14S R5W S24  |
| General legal description       | Tucson FO - Organ Pipe National Monument, Kuakatch Wash |
| Location 4: Pima County, AZ     |   |
| Township/Range/Section          | T16S R1E S21  |
| General legal description       | Sells FO - Pisinimo District                            |
| Location 5: Maricopa County, AZ |   |
| Township/Range/Section          | T6N R2E S33   |
| General legal description       | Phoenix FO - Lockett Ranch SW 1/4 Sec. 33               |

## Contributors

Dan Robinett  
Dan Robinett, J. Norris  
Larry D. Ellicott  
Stephen Cassady  
Steve Barker

## Rangeland health reference sheet

Interpreting Indicators of Rangeland Health is a qualitative assessment protocol used to determine ecosystem condition based on benchmark characteristics described in the Reference Sheet. A suite of 17 (or more) indicators are typically considered in an assessment. The ecological site(s) representative of an assessment location must be known prior to applying the protocol and must be verified based on soils and climate. Current plant community cannot be used to identify the ecological site.

|   |   |
|---|---|
| Author(s)/participant(s)                    | Dave Womack Dan Robinett, Emilio Carrillo |
| Contact for lead author                     | NRCS Tucson Area Office                   |
| Date  | 03/07/2005                                |
| Approved by                                 | S. Cassady                                |
| Approval date                               |   |
| Composition (Indicators 10 and 12) based on | Annual Production                         |

## Indicators

1. **Number and extent of rills:** Rills are uncommon but usually well vegetated and not eroding.

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2. **Presence of water flow patterns:** Water flow patterns are common, discontinuous and a function of upland runoff.

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3. **Number and height of erosional pedestals or terracettes:** None
- 
4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** 20-60%. Lower values expected in El Nino years.
- 
5. **Number of gullies and erosion associated with gullies:** Uncommon
- 
6. **Extent of wind scoured, blowouts and/or depositional areas:** No evidence
- 
7. **Amount of litter movement (describe size and distance expected to travel):** All litter classes
- 
8. **Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):** Soil surface resistance to erosion is good. Expect values of 1-3 in plant interspaces; 4-6 in plant canopies.
- 
9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** Weak thin platy to granular to subangular blocky with depth; 7.5-1R6/4 dry, 7.5-10YR4/4 moist; entisol - no A horizons.
- 
10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** Canopy 20-30%; 85-90% perennial grasses, 5-10% annual forbs and grasses, and <2-3% trees and shrubs. Cover is well dispersed throughout site.
- 
11. **Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site):** None
- 
12. **Functional/Structural Groups (list in order of descending dominance by above-ground annual-production or live foliar cover using symbols: >>, >, = to indicate much greater than, greater than, and equal to):**
- Dominant: trees & shrubs > perennial grasses > winter annuals > summer annuals > perennial forbs > succulents > cryptogams
- Sub-dominant:
- Other:
- Additional:
- 
13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** 0-50% canopy mortality

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14. **Average percent litter cover (%) and depth ( in):** Herbaceous litter is not persistent on this site and may be 35-60% in El Niño years.

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15. **Expected annual above-ground annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** 900 lbs/ac unfavorable precipitation, 1200 lbs/ac normal precipitation, 2000 lbs/ac favorable precipitation

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16. **Potential invasive (including noxious) species (native and non-native). List species which BOTH characterize degraded states and have the potential to become a dominant or co-dominant species on the ecological site if their future establishment and growth is not actively controlled by management interventions. Species that become dominant for only one to several years (e.g., short-term response to drought or wildfire) are not invasive plants. Note that unlike other indicators, we are describing what is NOT expected in the reference state for the ecological site:** Sahara mustard (potential), London Rocket, Cheeseweed, whitethorn acacia, mesquit, jimmyweed, burweed

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17. **Perennial plant reproductive capability:** Not impaired for shrubs, drought impaired for perennial grasses and forbs.

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